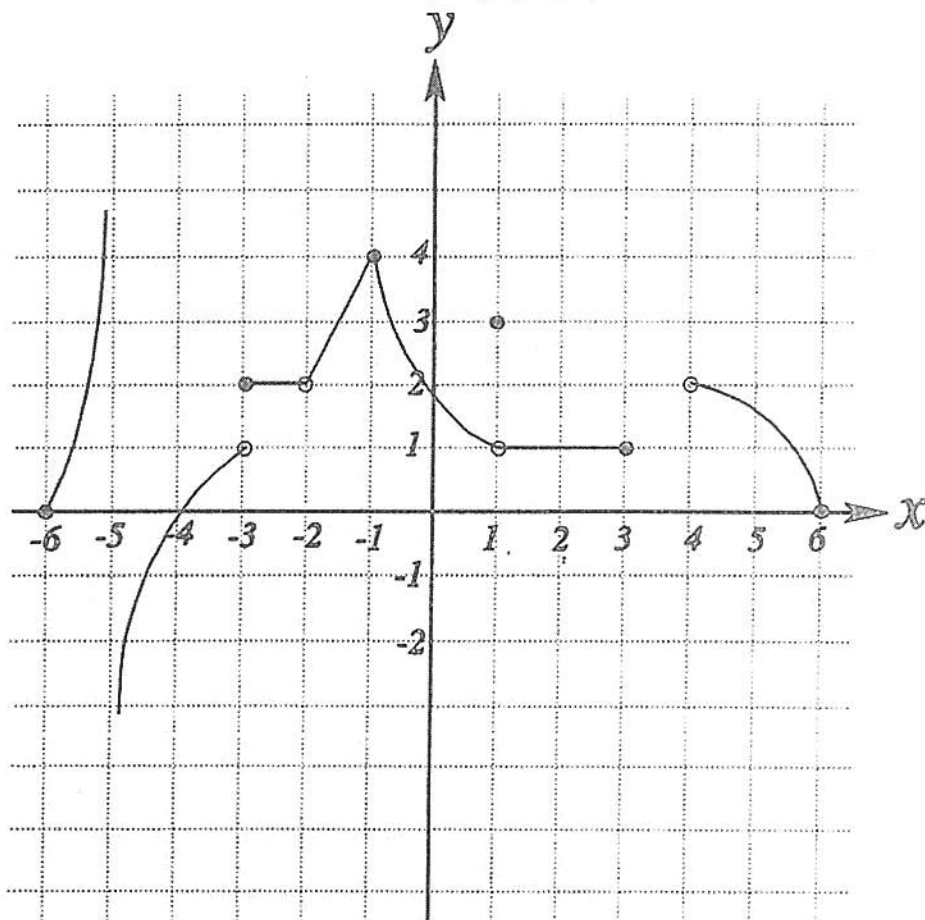


FINDING LIMITS GRAPHICALLY AN INTRODUCTION

Consider a function $y = f(x)$ graphed below:



Find each limit if it exists, and find each function value, if possible.

1. a) $\lim_{x \rightarrow -1^+} f(x) =$

b) $\lim_{x \rightarrow -1^-} f(x) =$

c) $\lim_{x \rightarrow -1} f(x) =$

d) $f(-1) =$

3. a) $\lim_{x \rightarrow -2^+} f(x) =$

b) $\lim_{x \rightarrow -2^-} f(x) =$

c) $\lim_{x \rightarrow -2} f(x) =$

d) $f(-2) =$

5. a) $\lim_{x \rightarrow 3^+} f(x) =$

b) $\lim_{x \rightarrow 3^-} f(x) =$

c) $\lim_{x \rightarrow 3} f(x) =$

d) $f(3) =$

2. a) $\lim_{x \rightarrow 1^+} f(x) =$

b) $\lim_{x \rightarrow 1^-} f(x) =$

c) $\lim_{x \rightarrow 1} f(x) =$

d) $f(1) =$

4. a) $\lim_{x \rightarrow -3^+} f(x) =$

b) $\lim_{x \rightarrow -3^-} f(x) =$

c) $\lim_{x \rightarrow -3} f(x) =$

d) $f(-3) =$

6. a) $\lim_{x \rightarrow -5^+} f(x) =$

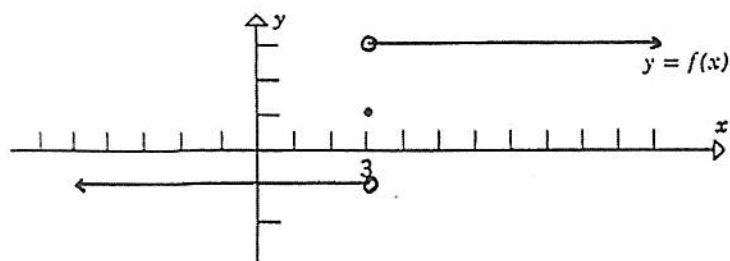
b) $\lim_{x \rightarrow -5^-} f(x) =$

c) $\lim_{x \rightarrow -5} f(x) =$

d) $f(-5) =$

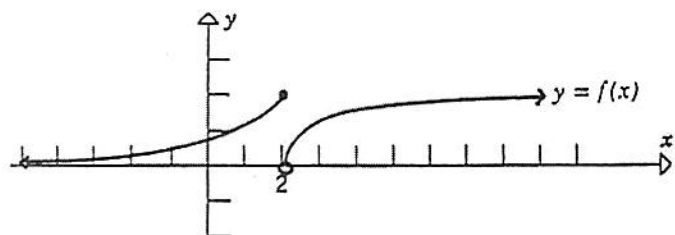
1. For the function f graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 3^-} f(x)$ | (b) $\lim_{x \rightarrow 3^+} f(x)$ |
| (c) $\lim_{x \rightarrow 3} f(x)$ | (d) $f(3)$ |
| (e) $\lim_{x \rightarrow -\infty} f(x)$ | (f) $\lim_{x \rightarrow +\infty} f(x)$ |



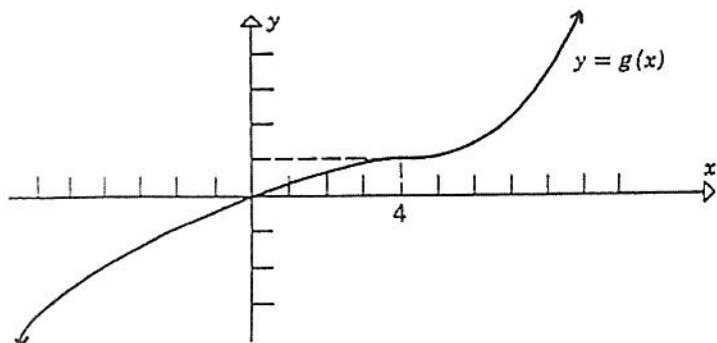
2. For the function f graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 2^-} f(x)$ | (b) $\lim_{x \rightarrow 2^+} f(x)$ |
| (c) $\lim_{x \rightarrow 2} f(x)$ | (d) $f(2)$ |
| (e) $\lim_{x \rightarrow -\infty} f(x)$ | (f) $\lim_{x \rightarrow +\infty} f(x)$ |



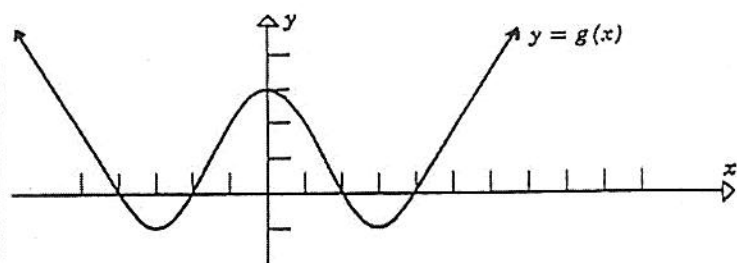
3. For the function g graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 4^-} g(x)$ | (b) $\lim_{x \rightarrow 4^+} g(x)$ |
| (c) $\lim_{x \rightarrow 4} g(x)$ | (d) $g(4)$ |
| (e) $\lim_{x \rightarrow -\infty} g(x)$ | (f) $\lim_{x \rightarrow +\infty} g(x)$ |



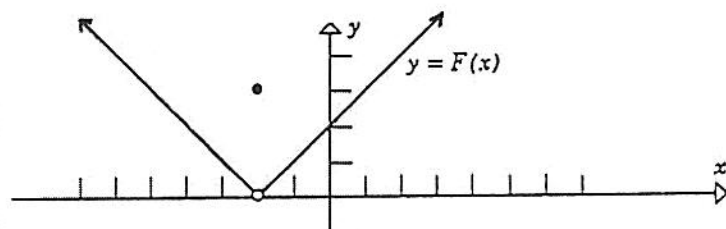
4. For the function g graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 0^-} g(x)$ | (b) $\lim_{x \rightarrow 0^+} g(x)$ |
| (c) $\lim_{x \rightarrow 0} g(x)$ | (d) $g(0)$ |
| (e) $\lim_{x \rightarrow -\infty} g(x)$ | (f) $\lim_{x \rightarrow +\infty} g(x)$ |



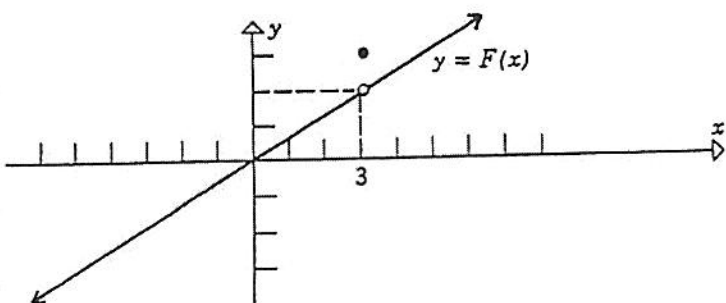
5. For the function F graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow -2^-} F(x)$ | (b) $\lim_{x \rightarrow -2^+} F(x)$ |
| (c) $\lim_{x \rightarrow -2} F(x)$ | (d) $F(-2)$ |
| (e) $\lim_{x \rightarrow -\infty} F(x)$ | (f) $\lim_{x \rightarrow +\infty} F(x)$ |



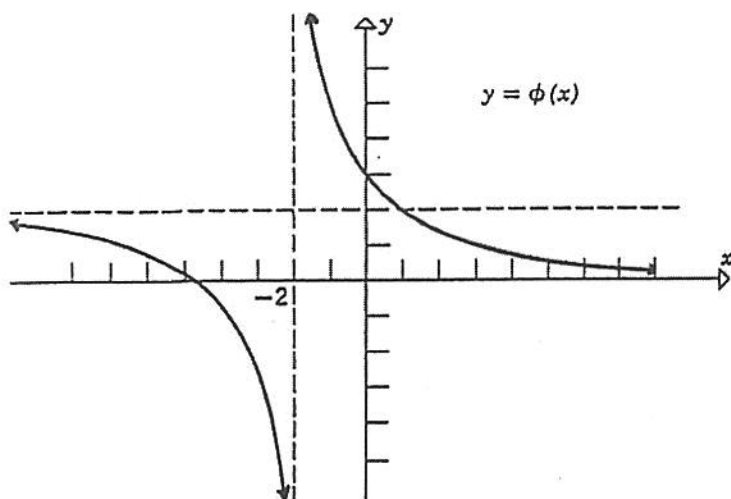
6. For the function F graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 3^-} F(x)$ | (b) $\lim_{x \rightarrow 3^+} F(x)$ |
| (c) $\lim_{x \rightarrow 3} F(x)$ | (d) $F(3)$ |
| (e) $\lim_{x \rightarrow -\infty} F(x)$ | (f) $\lim_{x \rightarrow +\infty} F(x)$ |



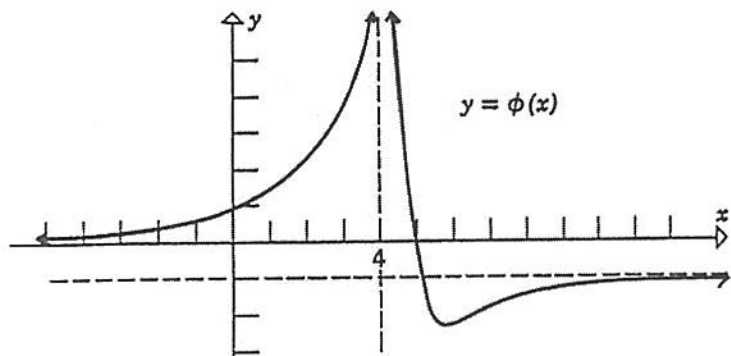
7. For the function ϕ graphed below, find

- | | |
|--|--|
| (a) $\lim_{x \rightarrow -2^-} \phi(x)$ | (b) $\lim_{x \rightarrow -2^+} \phi(x)$ |
| (c) $\lim_{x \rightarrow -2} \phi(x)$ | (d) $\phi(-2)$ |
| (e) $\lim_{x \rightarrow -\infty} \phi(x)$ | (f) $\lim_{x \rightarrow +\infty} \phi(x)$ |



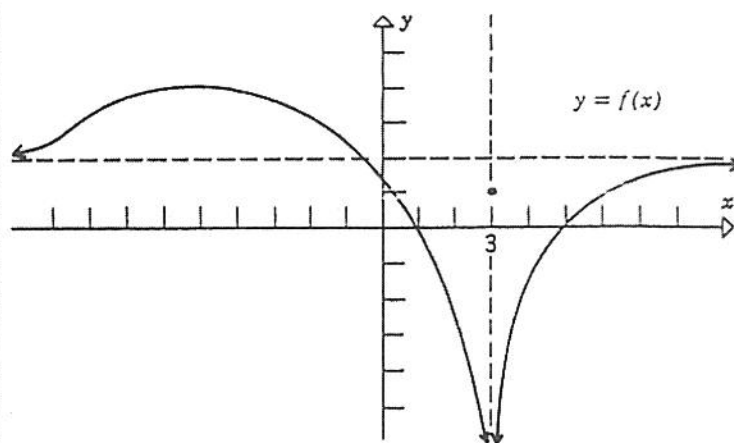
8. For the function ϕ graphed below, find

- | | |
|--|--|
| (a) $\lim_{x \rightarrow 4^-} \phi(x)$ | (b) $\lim_{x \rightarrow 4^+} \phi(x)$ |
| (c) $\lim_{x \rightarrow 4} \phi(x)$ | (d) $\phi(4)$ |
| (e) $\lim_{x \rightarrow -\infty} \phi(x)$ | (f) $\lim_{x \rightarrow +\infty} \phi(x)$ |



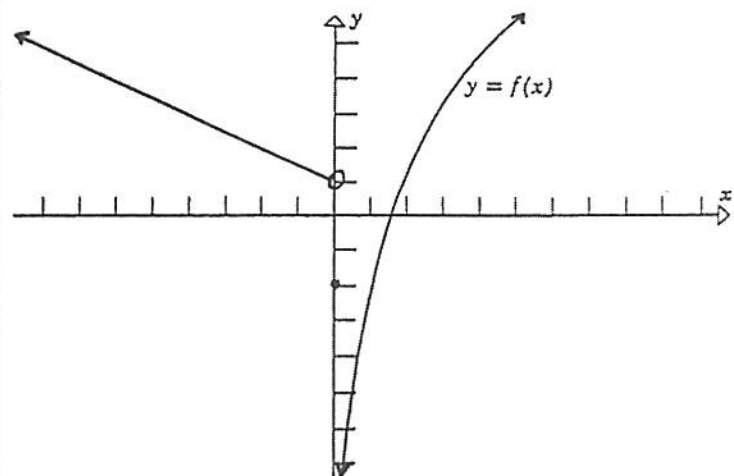
9. For the function f graphed below find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 3^-} f(x)$ | (b) $\lim_{x \rightarrow 3^+} f(x)$ |
| (c) $\lim_{x \rightarrow 3} f(x)$ | (d) $f(3)$ |
| (e) $\lim_{x \rightarrow -\infty} f(x)$ | (f) $\lim_{x \rightarrow +\infty} f(x)$ |



10. For the function f graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 0^-} f(x)$ | (b) $\lim_{x \rightarrow 0^+} f(x)$ |
| (c) $\lim_{x \rightarrow 0} f(x)$ | (d) $f(0)$ |
| (e) $\lim_{x \rightarrow -\infty} f(x)$ | (f) $\lim_{x \rightarrow +\infty} f(x)$ |



11. For the function G graphed below, find

- | | |
|---|---|
| (a) $\lim_{x \rightarrow 0^-} G(x)$ | (b) $\lim_{x \rightarrow 0^+} G(x)$ |
| (c) $\lim_{x \rightarrow 0} G(x)$ | (d) $G(0)$ |
| (e) $\lim_{x \rightarrow -\infty} G(x)$ | (f) $\lim_{x \rightarrow +\infty} G(x)$ |

